UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,189	08/16/2001	Kevin J. Hyland	922-144	9217

7590 01/22/2004

NIXON & VANDERHYE P.C.
8th Floor
1100 North Glebe Rd.
Arlington, VA 22201-4714

EXAMINER	
FILIPCZYK, MARCIN R	

ART UNIT	PAPER NUMBER
2171	5

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/930,189	HYLAND ET AL.	
	Examin r	Art Unit	
	Marc R Filipczyk	2171	

-- The MAILING DATE of this communication appears on the cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

This action is responsive to application filed on September 16, 2001 in which claims 1-6 are presented for examination. The formal drawings received on 10/16/01 are in compliance.

Specification

The disclosure is objected to because of the following informalities: The disclosure including the specification, abstract and claims is objected to because the entire text, punctuation in particular is difficult to read do to an inadequate, light printed specification. A newly printed copy of the entire disclosure is requested.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 5, the phrase, "the respective node" is indefinite. How does respective define or identify the desired node. Second, the segment, "highest available node" is indefinite. Where is the highest available node located?

Regarding claims 2 and 6, the phrase, "each current node" is indefinite. How is the current node identified?

Regarding claim 4, the phrases, "increment or decrement" and "the magnitudes" are indefinite. How are the nodes incremented or decremented and how are the magnitudes determined?

Regarding claims 2-4 and 6 depend from 1 and 5 respectively, thus contain the deficiencies of those claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-6 are rejected under 35 U.S.C. 102(a) as best as the Examiner is able to ascertain as being anticipated by Sedgewick (Algorithms).

Regarding claims 1 and 5, Sedgewick discloses a binary search tree (BST) (fig. 4.12, Sedgewick) comprising:

A multiplicity of address nodes (fig. 4.12) each operable to store a data element (fig. 4.12) (Note: every node by default contains an address and space for data) and is organized in a multiplicity of levels, the nodes including a root node and for each node at each level except the lowest level two child nodes in the immediately lower level (fig. 4.12), whereby the address of each child node is computable from the address of the parent node (fig. 4.12).

(Note: binary search tree comprises of multiple parent/child branches, each parent node by default can directly map to each child node)

a hardware engine (fig. 4.12, program run by cpu) for the insertion of elements in the nodes (default of BST) and to search for the top most node (default of BST), and searching in a pattern in which all the nodes at each level beginning at the highest level are searched before the search continues to the next lower level (fig. 4.12 and page 47, last paragraph and page 48, lines 1-5).

Regarding claims 2-4 and 6, Sedgewick discloses searching for a desired element, inserting and deleting nodes and elements (default of BST).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as best as the Examiner is able to ascertain as being unpatentable over Bialkowski (U.S. Patent No. 5,463,777) in view of Sedgewick (Algorithms).

Regarding claims 1 and 5, Bialkowski teaches a binary search tree (fig. 3, Bialkowski) comprising:

A multiplicity of address nodes (fig. 3) each operable to store a data element (fig. 3, and col. 5, lines 43-47) and is organized in a multiplicity of levels, the nodes including a root node

and for each node at each level except the lowest level two child nodes in the immediately lower level (fig. 3 Bialkowski), whereby the address of each child node is computable from the address of the parent node (col. 2, lines 9-16, Bialkowski).

Bialkowski further teaches a hardware engine (fig. 9, items 100 and 110) for the insertion of elements in the nodes (col. 1, lines 55-58 and col. 7, lines 20-22) and to search for the top most node (default of binary search tree structure), but Bialkowski does not teach searching in a pattern in which all the nodes at each level beginning at the highest level are searched before the search continues to the next lower level. However, searching in a pattern in which all the nodes at each level beginning at the highest level are searched before the search continues to the next lower level is well known in the art of computer sciences and mathematics, and is widely called the "level-order" traversal. Sedgewick is one of many authors to teach level-order searching (fig. 4.12, Sedgewick). Thus it would have been obvious to a person of ordinary skill in the art at the time the invention was made to take the nodes of Bialkowski and implement the level-order traversal (fig. 4.12, Sedgewick) to the binary tree by slightly modifying the search algorithm. One would have been motivated to combine the two teachings because they both teach binary search trees with nodes and depending on the task, level-order traversal is more efficient than other sorting methods.

Regarding claims 2 and 6, Bialkowski/Sedgewick teach reading the tree for the desired element from top of the tree until entire level is read and continuing on the next level until the element is found (fig. 4.12, Sedgewick).

Regarding claim 3, Bialkowski/Sedgewick teach storing a new element at an available node (col. 7, lines 20-22 and Bialkowski).

(Note: nodes are created to support new elements)

Regarding claim 4, Bialkowski/Sedgewick teach inserting new element at an available node (col. 7, lines 20-22, Bialkowski).

(Note: nodes are created to support new elements)

Conclusion

To expedite the process of examination Examiner requests that all future correspondences in regard to overcoming prior art rejections or other issues (e.g. 35 U.S.C. 112, objections and the like) set forth by the Examiner that Applicants provide and link to the most specific page and line numbers of the disclosure where the best support is found (see 35 U.S.C. 132).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc R Filipczyk whose telephone number is 703-305-7156. The examiner can normally be reached on Mon-Fri, 8am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 703-308-1436. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

MF
January 16, 2004

SAFET METJAHIC
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100